

Proposed Item for Biobased Designation

The following biobased product information has been collected to support item designation by USDA for the Federal Biobased Product Preferred Procurement Program (FB4P). This summary reflects data available as of July 26, 2006.

Title: 2-Cycle Engine Oils

Description: Oil for low horse-power two cycle gasoline engines commonly found in lawn mowers, mopeds, and marine outboard boats to reduce friction and maintain a proper function of the engine systems.

Manufacturers Identified: 11 manufacturers producing 2-Cycle Engine Oils have been identified through internet searches, manufacturer's directories, trade associations, and company submissions.

Industry Associations Investigated: The following industry associations have been investigated for member companies producing 2-Cycle Engine Oils:

- Marine Business Journal
- American Petroleum Institute
- Independent Lubricants Manufacturers Association
- Biobased Manufacturers Association
- United Soybean Board
- National Marine Manufacturers Association

Commercially Available Products Identified: Of the manufacturers identified, 17 2-Cycle Engine Oils are commercially available on the market.

Product Information Collected: Specific product information including company contact, intended use, biobased content, and performance characteristics have been collected on 5 2-Cycle Engine Oils.

Industry Performance Standards: Product information submitted by biobased manufacturers indicate that have typically been tested to the following industry standards:

- American Society for Testing and Materials #D445-04e2 Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)
- American Society for Testing and Materials #D93-02a Standard Test Methods for Flash-Point by Pensky-Martens Closed Cup Tester
- American Society for Testing and Materials #D2896-05 Standard Test Method for Base Number of Petroleum Products by Potentiometric Perchloric Acid Titration
- American Society for Testing and Materials #D97-05 Standard Test Method for Pour Point of Petroleum Products

- American Society for Testing and Materials #D2500-02e1 Standard Test Method for Cloud Point of Petroleum Products
- American Society for Testing and Materials #D4682-87(2002) Standard Specification for Miscibility with Gasoline and Fluidity of Two-Stroke-Cycle Gasoline Engine Lubricants
- CEC-L-33-T82 is comparable to ASTM 5864 and tests for biodegradability
- American Society for Testing and Materials #D2619 Standard Test Method for Hydrolytic Stability of Hydraulic Fluids (Beverage Bottle Method)
- American Society for Testing and Materials #D892 Standard Test Method for Foaming Characteristics of Lubricating Oils
- American Society for Testing and Materials #D665 Standard Test Method for Rust-Preventing Characteristics of Inhibited Mineral Oil in the Presence of Water
- American Society for Testing and Materials #D2270 Standard Practice for Calculating Viscosity Index From Kinematic Viscosity at 40 and 100°C
- International Organization for Standardization #ISO GD Surface chemical analysis - Glow discharge optical emission spectrometry (GD-OES)

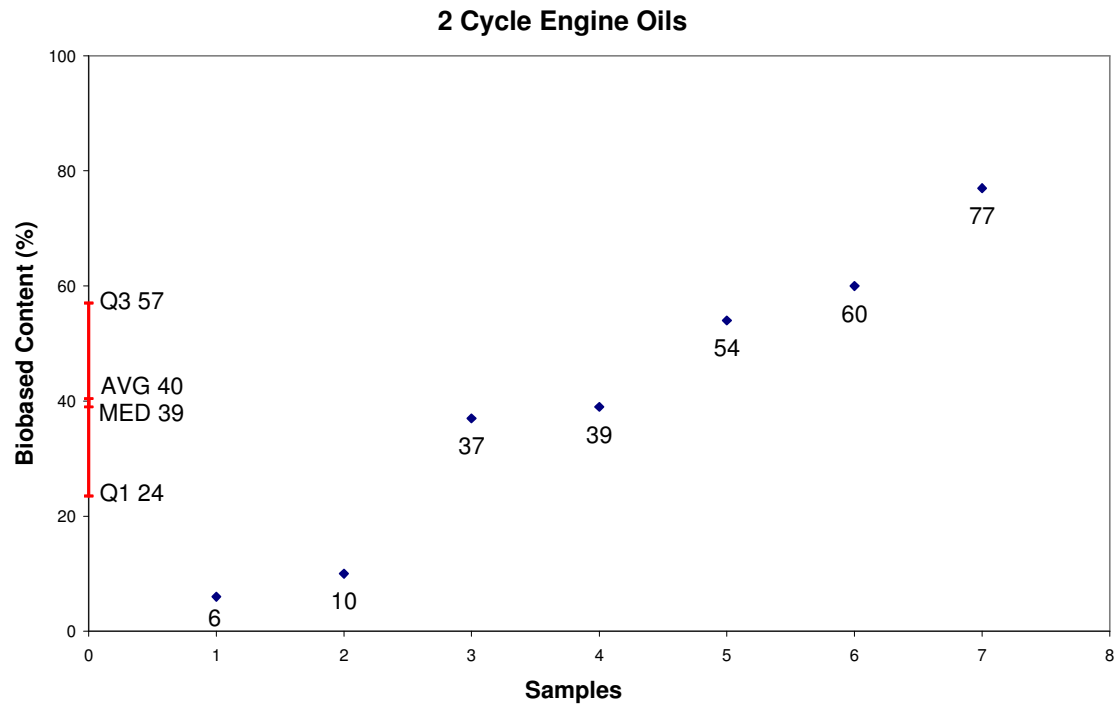
Samples Tested for Biobased Content: 7 samples of 2-Cycle Engine Oils have been submitted to independent laboratories for biobased content testing as specified by ASTM standard D6866-04.

Biobased Content Data: Results from biobased content testing of 2-Cycle Engine Oils indicate a range of content percentages from 6% minimum to 77% maximum biobased content as defined by ASTM D 6866-04. A detailed distribution of biobased content levels is included as Appendix A.

Products Submitted for BEES Analysis: Life-cycle cost and environmental effect data for 3 2-Cycle Engine Oils have been submitted to NIST for BEES analysis.

BEES Analysis: The life-cycle costs of the submitted 2-Cycle Engine Oils range from \$2.70 minimum to \$4.84 maximum per usage unit. The environmental scores range from 0.0474 minimum to 0.0661 maximum. A detailed summary of the BEES results is included as Appendix B.

Appendix A - Biobased Content Data

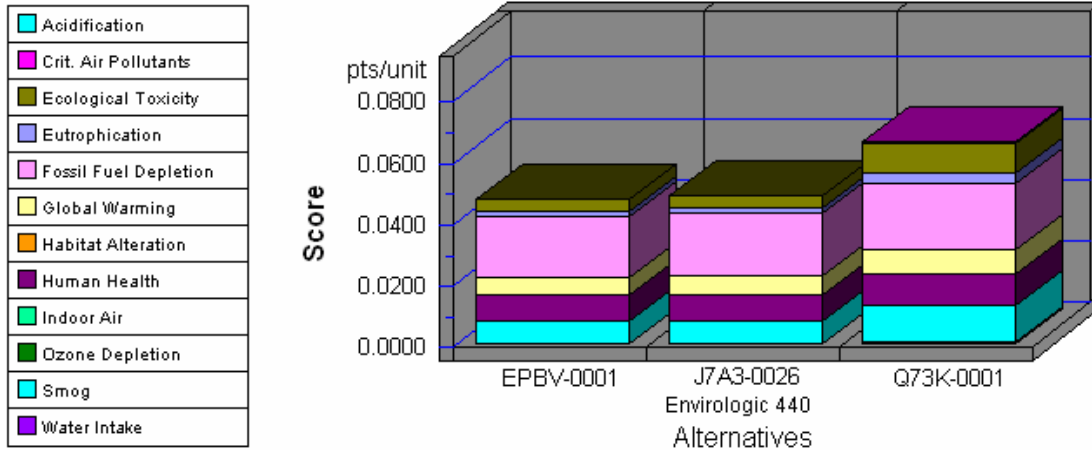


	Manufacturers Identified	Products Identified	C14	BEES
1	AJTK	AJTK-0043	6	
2	J7A3	J7A3-0026	10	yes
3	J7A3	J7A3-0015	37	
4	JY3G	JY3G-0056	39	
5	AJTK	AJTK-0011	54	
6	RGWJ	RGWJ-0025	60	
7	N1H5	N1H5-0009	77	
8	Q73K	Q73K-0001		yes
9	EPBV	EPBV-0001		yes

Appendix B - BEES Analysis Results

Functional Unit: 1 Gallon (mixed with fuel and ready for use)

Environmental Performance

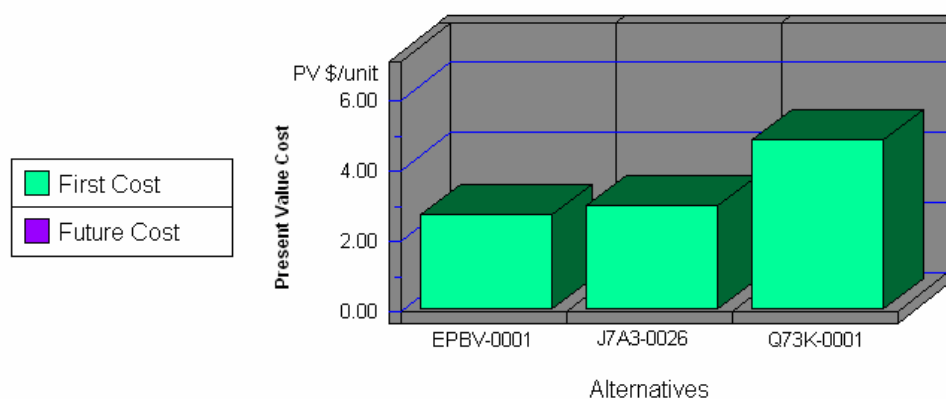


Note: Lower values are better

Category	EPBV-0001	J7A3-0026	Q73K-0001
Acidification--5%	0.0000	0.0000	0.0000
Crit. Air Pollutants--6%	0.0002	0.0002	0.0008
Ecolog. Toxicity--11%	0.0036	0.0036	0.0092
Eutrophication--5%	0.0017	0.0018	0.0035
Fossil Fuel Depl.--5%	0.0200	0.0204	0.0215
Global Warming--16%	0.0060	0.0061	0.0080
Habitat Alteration--16%	0.0000	0.0000	0.0000
Human Health--11%	0.0080	0.0085	0.0103
Indoor Air--11%	0.0000	0.0000	0.0000
Ozone Depletion--5%	0.0000	0.0000	0.0000
Smog--6%	0.0079	0.0078	0.0122
Water Intake--3%	0.0000	0.0001	0.0006
Sum	0.0474	0.0485	0.0661

Appendix B (continued)

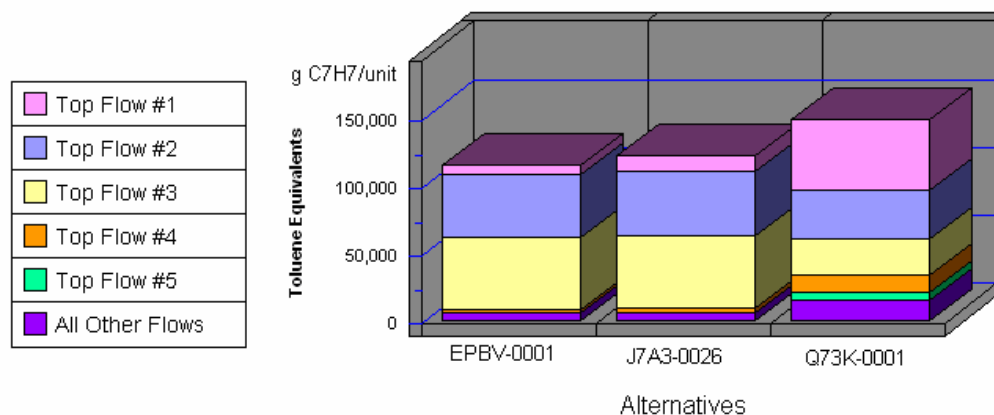
Economic Performance



Category	EPBV-0001	J7A3-0026	Q73K-0001
First Cost	2.70	2.95	4.84
Future Cost-- 3.9%	0.00	0.00	0.00
Sum	2.70	2.95	4.84

*No significant/quantifiable durability differences were identified among competing alternatives. Therefore, future costs were not calculated.

Human Health by Sorted Flows*



Note: Lower values are better

Category	EPBV-0001	J7A3-0026	Q73K-0001
Cancer--(a) Dioxins (unspecifie	7,045.85	11,526.09	51,695.09
Cancer--(w) Phenol (C6H5OH)	45,702.60	46,985.48	36,321.54
Cancer--(w) Arsenic (As3+, As5+	53,180.28	53,352.38	26,504.09
Cancer--(a) Arsenic (As)	2,895.88	3,588.37	13,150.36
Noncancer--(a) Mercury (Hg)	231.06	183.69	5,314.42
All Others	6,063.22	6,429.82	15,682.46
Sum	115,118.88	122,065.84	148,667.96

*Sorted by five topmost flows for worst-scoring product